DOCUMENT RESUME

ED 211 025 HE 014 705

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TITLE Female Faculty Salary Equity Study: University of Maryland, College Park.
INSTITUTION Maryland Univ., College Park. Office of Institutional Studies.
PUB DATE 29 Oct 81
NOTE 41p.

EDRS PRICE MF01/PC02 Plus postage.
DESCRIPTORS Academic Rank (Professional); *College Faculty; Comparative Analysis; Departments; Doctoral Degrees; Employment Practices; Females; Full Time Faculty; Higher Education; Institutional Research; *Males; Professors; *Salary Wage Differentials; *Sex Differences; *Teacher Salaries; *Women Faculty
IDENTIFIERS *University of Maryland College Park

ABSTRACT

Salary differences between full-time male and female faculty members who hold a doctoral degree were studied at the University of Maryland, College Park, in 1979. The full-time instructional and research faculty having the rank of professor, associate professor, or assistant professor who possess a doctoral degree totaled 1,199 (1,010 males and 189 females). Variables that were identified as most relevant for a salary sex equity study, and for which data were available, are as follows: years since degree; years since degree squared (to account for the nonlinear nature of salary growth over a career), salary, rank, and academic unit (a grouping variable representing 11 academic organizational clusters). It was found that for the campus in the aggregate, when taking year-since-doctoral degree and rank into consideration, on the average females are paid less than males. The best estimate of this difference is $105,554. This aggregate figure, however, is highly misleading because 83.4 percent of the deficit is located in two divisions (Human and Community Resources and Arts and Humanities) that employ 67.2 percent of the female faculty. The disparity between male and female salaries was greatest at the professor rank. The average salary deficit per female at this rank was $1,071, over twice the average amount at the associate and assistant ranks. Only 13.8 percent of the total female faculty were at this rank but they accounted for 26.4 percent of the total salary deficit. Additionally, female doctoral faculty are concentrated in disciplines having lower average salaries. As a result of the study, the college established committees to determine the comparability of individual female faculty members' salaries with those of similarly situated male faculty members, and the salaries of 68 women were increased. (SW)

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FEMALE FACULTY SALARY EQUITY STUDY:

UNIVERSITY OF MARYLAND, COLLEGE PARK

by

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October 29, 1981

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FOREWORD

The University of Maryland-College Park is firmly committed to ensuring that faculty salaries in each discipline and profession are based solely upon the qualities and accomplishments of individual faculty members. Sex, race, and ideological orientations should not have a bearing on salary levels.

The Vice Chancellor for Academic Affairs has monitored the relationship between male and female faculty salaries for several years to ensure University policies in this area are reflected in individual salary actions. As part of this regular monitoring, the Vice Chancellor in December, 1979 asked the Office of Institutional Studies to cooperate in a study of male and female faculty salaries, based on fall 1979 salary data. The Office of Institutional Studies conducted the study, described in this report. This study examines differences between full-time male and female faculty members who hold the doctorate degree. The study focuses on any differences which may be attributable to the annual salary review process. Further studies are planned of differences attributable to salary levels established at initial appointment and of salary differences attributable to promotion and tenure actions. An additional study also is planned to examine salary differences between male and female faculty who do not possess the doctoral degree.

The purpose of this study is to provide data and analyses to the Chancellor, Vice Chancellor for Academic Affairs, and other campus officials which will enable them to make informed judgments on the equity of salaries paid male and female faculty.

INTRODUCTION

An analysis of faculty salary levels needs to be reviewed in the context of UMCP's organization, the different contexts within which salary decisions are made, and a brief review of past efforts to seek salary equity between males and females.

ORGANIZATION OF UMCP

UMCP is organized into five divisions. Divisions contain 1) colleges and a school, some of which are further divided into departments; and 2) departments which are not included in a college or the school.

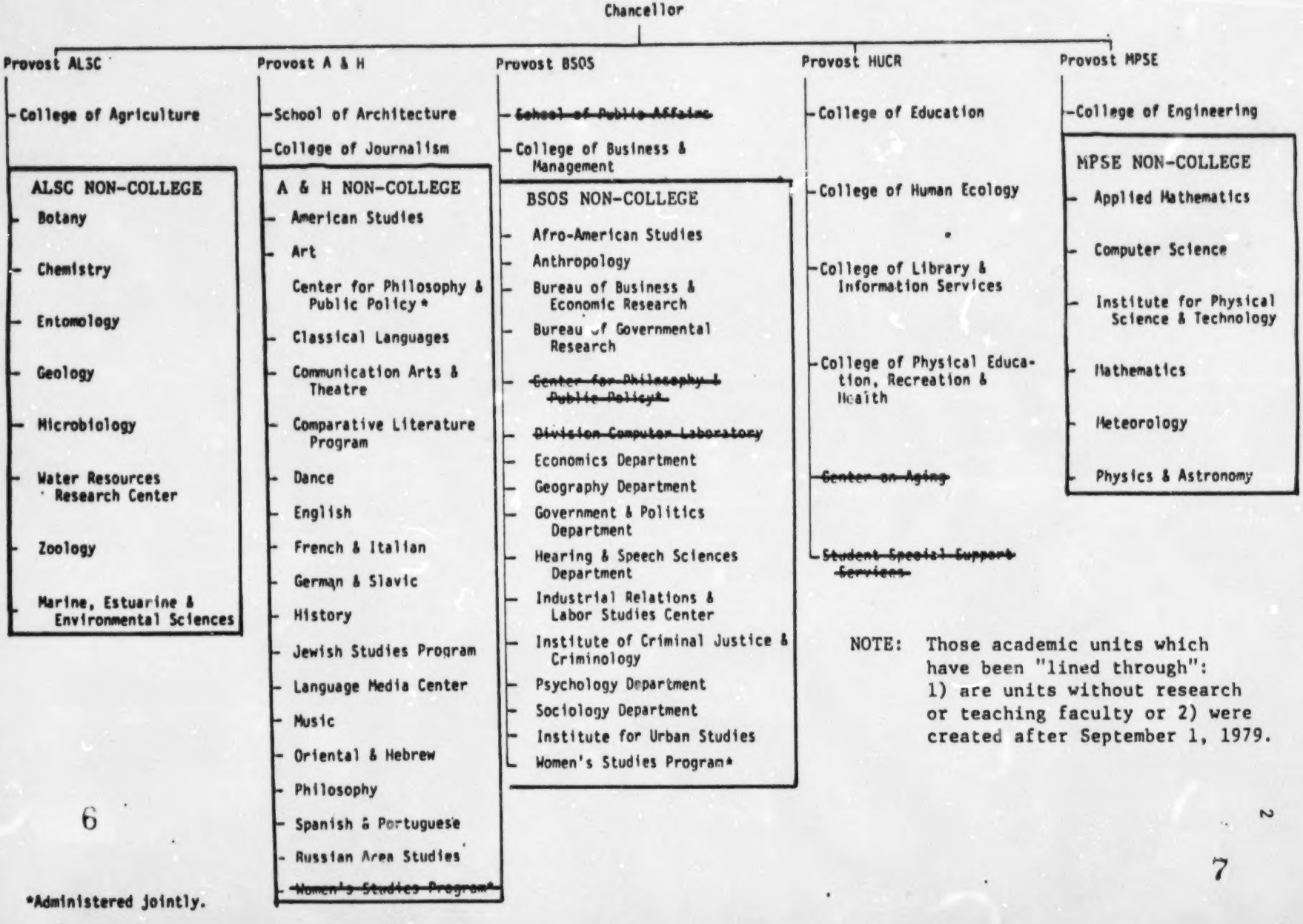
All of the teaching faculty are employed in these divisions. Recommendations on faculty salaries originate in the departments and are reviewed at higher levels. The Departments, Colleges, School and Divisions are given a large measure of autonomy to recruit and reward the performance of their faculty, although a veto over specific actions and policies is held by higher-level administrators.

Staff services and campus-wide coordination of academic policy and faculty review is provided by the Vice Chancellor for Academic Affairs. Services and coordination in other areas are provided by Vice Chancellors for Student Services and Administrative Services. Figure 1 provides an organization chart of the campus.

The statistical analyses performed in this study grouped data according to this existing academic organizational structure. Male/female salary differences are computed for each college and the School in each division, and for groupings of all other disciplines in each division which are not in a college or the School. The units which are grouped are shown in the boxes in Figure 1.

Figure 1

ORGANIZATIONAL CHART FOR THE UNIVERSITY OF MARYLAND AT COLLEGE PARK CAMPUS
PART B: ACADEMIC UNITS



NOTE: Those academic units which have been "lined through": 1) are units without research or teaching faculty or 2) were created after September 1, 1979.

*Administered jointly.

ASSESSMENTS OF SALARY EQUITY BETWEEN MALE AND FEMALE FACULTY

Studies of male and female faculty salary levels at UMCP have been conducted periodically since at least 1970. Generally, these studies employed regression equations to estimate average male and female salaries and then net differences were calculated. However, in one study faculty were categorized, gross means calculated by category, and subsets of matched pairs within categories then were analyzed. These studies were carried out by different groups including: the campus institutional research office, Committee W of the College Park Chapter of the Association of American University Professors, a sub-committee of the Chancellor's Commission on Women's Affairs, the Office of Academic Affairs, and the State Board of Higher Education (as part of a statewide study).

Female salaries which were below male means were identified in the studies conducted on campus and the findings were provided to Division, College and Departmental staff for their reviews of individual cases and for them to recommend corrections warranted by equity considerations. As a result of these reviews, a number of female faculty members received higher than normal salary increases.

The current study of salaries in 1979/1980 was initiated as part of the continuing UMCP effort to monitor salary equity and to make adjustments indicated by the findings. Further studies of 1980/81 male/female salary differences are now being undertaken by the Office of Institutional Studies.

CONTENTS OF STUDY

This study examines factors which should be considered in the design of a salary equity study. These factors include the selection and definition of the population, variables, statistical methodology and an interpretation of relevant findings and issues.

For UMCP in total, the study contains a conclusion that the accumulated salaries paid female faculty members holding the doctoral degree are $105,554 less than the corresponding male salary levels, when controlling for rank and years-since-doctoral degree. For the 189 women this amounts to an average salary deficit of $558. The salary differences are not evenly distributed among the divisions. The amounts attributed to each division are displayed in Table 1.

TABLE 1. -- Divisional Female Faculty Salary Differences: Fall, 1979

Academic Unit -- Division	Number of Females	Salary Differences
Agricultural and Life Sciences	21	$ 8,452
Arts and Humanities	57	27,352
Behavioral and Social Sciences	28	-3,274
Human and Community Resources	70	60,664
Mathematics, Physical Science and Engineering	13	12,359
Total UMCP	189	$105,554

The differences revealed by the study must be carefully interpreted since only a limited number of variables could be analyzed which might contribute to the observed differences. Therefore, one cannot conclude

that sex discrimination explains the differences observed. Nevertheless the unexplained differences do exist and, therefore, a review of possible salary adjustments is warranted, as well as undertaking further studies of appointments, promotion and tenure, and non-doctoral degree holders.

DESIGN OF THE STUDY

Decisions on faculty salaries are made as part of three different processes. First, an initial salary level is established for each newly hired faculty member. Second, salaries of all faculty members are reviewed annually and increases are awarded, when funds are available, to offset the effects of inflation and to recognize merit. Third, salaries of faculty members are reviewed, and merit increases awarded when appropriate, as part of consideration for promotion and tenure.

A full examination of salary equity must include a review of the results of each of these three decision processes in order to: 1) identify where differences are occurring, 2) determine reasons for these differences, and 3) reveal process(es) which might need modification.

This study examines salary differences which could result from either the annual salary review process and/or from salaries established at initial appointment. The study, however, does not examine differences in salaries established at initial appointment nor does it examine differences in promotion and tenure awards. A further study will be conducted of initial appointments and promotion and tenure decisions to assess the equity of salary decisions made as part of those processes. In addition, annual reviews of salary equity are planned to monitor changes which may take place over time.

A study of male and female faculty salary equity must define the "faculty" to be included in the study. A decision also must be made on the assumptions and the variables which will be included in the study, as well as the data necessary to assess each variable. Finally, a methodology must be selected which permits a valid analysis of the data and proper interpretation of results.

RESEARCH QUESTION

What differences exist between the salary levels of male and female faculty holding the same academic rank in similar disciplines who received their doctoral degree the same year?

POPULATION

The study group includes all UMCP full-time instructional and research faculty having the rank of professor, associate professor, or assistant professor who possess a doctoral degree. Administrators such as deans, associate and assistant deans, department chairs, and certain directors are omitted from the analyses. Additionally, faculty on leave-without-pay and visiting faculty are excluded. The resulting population consists of 1,199 faculty members (1,010 males and 189 females).

Faculty salary data, background information, and budget detail were obtained from the "frozen" fall, 1979 personnel data base and from Payroll and Budget Offices' records for the same period. From these sources, a file of instructional and research faculty was created. This file was extensively edited and numerous misclassifications and

errors corrected. A preliminary analysis indicated that faculty who did not hold a doctoral degree were a very diverse group. Therefore, they were excluded from the study group. A further salary equity study will be undertaken to examine this group.

VARIABLES

In order to explore reasons for possible differences between male and female salaries, and the legitimacy of those reasons, a study must seek to identify the variables which appear to cause the differences. On the surface this might appear to be a relatively simple undertaking. However, in practice it turns out to be exceedingly complex and difficult. There are a large number of reasons why salaries might differ and many of them are considered legitimate by most persons. The identification of each significant reason for differences, is complicated by the fact that there is little consensus on models or theories of psychological, social and cultural interaction affecting salary determination. Even when relevant variables can be identified sometimes there is disagreement over their significance or legitimacy. Furthermore, many variables are hard to quantify and data frequently are not regularly collected for those that can be quantified. The time and costs of collecting and analyzing data which are not contained in automated data systems frequently precludes assessing the effects of potentially important variables.

POTENTIAL VARIABLES

A brief listing of some variables which might be included in an analysis of faculty salary equity follows:

The Level of Experience of the Individual

Salary levels typically reflect the years of academic service of individuals and the nature of their prior service. Some experience variables which might affect salary are:

1. Time elapsed since receipt of the doctoral degree
2. Time elapsed since receipt of tenure and promotions
3. Prior administrative appointments
4. Length of employment prior to receipt of doctoral degree
5. Age at which doctoral degree was attained
6. Unemployment or non-academic employment after receipt of degree
7. Rank and tenure status at time of employment by institution
8. Institution which awarded doctoral degree

Academic Distinction

Institutions of higher education typically award a major portion of salary increases on the basis of individual quality and accomplishments. Some variables on which quality judgments are based include:

1. Scholarly productivity including publications, invited speeches, performances, and research grants and contract awards
2. Scholarly recognition through awards, literature citations, and through peer standing in a discipline or profession

3. Professional leadership through offices in associations and activities related to enhancing the progress of the discipline or profession
4. Attainment of tenure and/or promotions
5. Service to the international community, state and campus through consultation; serving on advisory bodies; and related activities
6. Ability to teach

Field of Expertise and Allocation of Time Among Competing Responsibilities

Academic salaries typically are negotiated on the basis of academic marketplace conditions in the various disciplines and professions. In fields where competent faculty are scarce, salaries tend to be higher than average. Conversely, in fields where there is an adequate supply of competent faculty salary levels tend to be below the average.

Faculty within a discipline or profession frequently divide their time differently among their research, teaching and service activities. The different academic functions are not always given equal weight in determining faculty merit for salary purposes. An internationally renowned researcher may be paid more than a faculty member exceptionally dedicated to public service or teaching.

Some variables which relate to field and allocation of efforts include:

1. Discipline or professional field
2. Proportion of time and emphasis given to teaching, research and service

3. Proportion of time given to institutional governance
4. Special assignments undertaken

Social and Cultural Characteristics of Men and Women

Traditional social roles of males and females may limit female occupational flexibility or opportunity and may affect career expectations, thus resulting in lower salaries. Women with small children may face demands which detract from their academic progress and they may not be mobile occupationally since husbands sometimes may be regarded as the chief breadwinner and the wife's employment, consequently, tied to his geographic location. Historic cultural norms may result in different female career expectations and may also cause them to bargain less effectively on salary issues. Some variables which may relate to social and cultural characteristics include:

1. Marital status
2. Male and female role expectations
3. Presence and number of children

In a study of salary differences between males and females, when variables such as those listed above are included in the analysis, salary differences potentially attributable to sex discrimination can be distinguished from those caused by other factors. If one could be sure all relevant variables were included in an analysis, using an appropriate methodology, and a salary difference remained which could not be explained by legitimate causes, then one could be sure the difference was attributable to sex discrimination. However, one typically can analyze only a limited number of variables and one is

never sure all significant variables are included in the analysis. Therefore, any conclusion from a salary equity study is, to a considerable degree, tenuous.

Basis for Selecting Variables

The literature on the use of regression analysis in sex equity studies contains important and well documented discussions about the merits of including or excluding specific predictor variables in regression equations. A review of several information sources reveals that a few basic predictor variables afford as accurate an estimate of faculty salary as would a regression model which includes substantially more variables. Variables other than salary (as a dependent variable) and rank, sex, years-since-highest degree, and academic unit (as the independent variables) improve prediction accuracy only slightly. There are several reasons which support this finding.

The inclusion of predictor variables such as publications, type-of-publications, first-date-employed at the institution, number-of-Ph.D-graduates-produced, and transformed variables have been shown to have had little effect on improving the accuracy of prediction.[1] This phenomenon occurs because the largest group in the study, white males, has relatively uniform characteristics and a few characteristics (suggesting intercorrelations) indirectly predicts others.

One variable in regression analysis and sex equity studies whose role has not been fully resolved is rank. Most of the literature implies

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[1] Scott, E. L., Higher Education Salary Evaluation Kit, AAUP, Washington, D.C. (1977), pp. 13 and 29-40.

that rank is sex-linked. The major contention is that decisions on rank, tenure and salary are so closely related that their effects are virtually inseparable. Therefore, if the process for establishing salary is questioned, the reason for doing a sex equity study, then rank and tenure should not be used as predictor variables in the regressions. On the other hand, a 1977 court case /_ Presseisen v. Swathmore College,' 15 FEP Case 1466 (E.D. Pa., 1977)_/, while criticizing the regression studies of both plaintiff and defendant, specifically found that rank should have been included given the lack of any specific proof that it was sex-linked.[2] A further factor which affects use of rank as a predictor variable is that, even at large major universities, regression analysis is constrained by the small number of women within ranks and academic units.

DATA AVAILABILITY

Very few of the variables listed above are available in University records in a form which permits them to be inexpensively analyzed. However, while this lack of data handicaps analysis, some of the variables have been shown, as noted above, to account for more of the differences among salaries than others.

The variables which relate to academic distinction are particularly hard to quantify and assess. The very basis for a profession relates to the highly complex and technical nature of the work performed. In professions the task of assessment and promotion are nearly always left to

[2]Gray, N. W. and Elizabeth L. Scott, "A Statistical Remedy for Statistically Identified Discrimination", Academe, (May, 1980), p. 176.

members of the profession since considerable training, experience and informed judgment are necessary for determining quality. Counts of publications, for example, are only proxies for quality since one good book is worth more than two which are mediocre. Furthermore, since education is so intimately concerned with the values imparted to young people, judgments on faculty quality are carefully shielded from possible political interference by means of peer review processes. Consequently, any quantification of quality variables are certain to only partially measure the great range of factors considered during peer reviews and therefore, are subject to considerable debate.

Data on variables relating to faculty discipline and professional fields must be considered because, as noted, salaries vary considerably among fields. Therefore, male/female salary comparisons cannot be legitimately made if departments in which faculty have different average salaries are grouped together in an analysis.

DATA COLLECTION AND ANALYSES COSTS

The time and resources required to collect, edit and analyze data which were not already available in the University's computer data base precluded incorporating many variables into the analyses undertaken in this study. However, the review of existing salary data, conducted during the study, identified many data errors and employee misclassifications which were corrected, improving the accuracy of existing data employed in the study.

VARIABLES SELECTED FOR ANALYSIS

The variables which were identified as most relevant for a salary sex equity study, and for which data were available, are listed below.

YEARS-SINCE-DEGREE -- The number of whole years since the date of award of the highest degree earned

YEARS-SINCE-DEGREE-SQUARED -- A product of the square of years since highest degree and included to account for the non-linear nature of salary growth over a career

SALARY -- The actual 1979-80 ten-month faculty salary or a converted ten-month salary. All funding scurces are included

ACADEMIC UNIT -- A grouping variable representing 11 academic organizational clusters:

1. Agriculture and Life Sciences: non-college disciplines
2. Mathematics, Physical Sciences and Engineering: non-college disciplines
3. Behavioral and Social Sciences: non-college disciplines
4. Arts and Humanities: non-college and non-school disciplines
5. College of Agriculture
6. College of Engineering
7. College of Business and Management
8. College of Education
9. College of Human Ecology
10. College of Health, Physical Education and Recreation
11. College of Journalism, School of Architecture and College of Library and Information Services (These two colleges and a school were grouped because the number of males was too small to produce a statistically reliable prediction line.)

RANK -- If a faculty member was a professor, rank (R1) was given the value one (1); if an associate professor, rank (R2) was given the value one (1); and if an assistant professor, rank (R3) was given the value one (1). In this manner the three rank variables (R1, R2, R3) were binary coded for use in a regression model.

STATISTICAL METHODOLOGY

One of the common statistical methods employed to analyze data for faculty salary equity studies is regression analysis. However, a review of recent literature, and discussions with persons expert in the methodologies used for equity studies, indicated that regression analyses have a number of characteristics which limit their appropriateness.

Regression analysis requires that there be a sufficient number of persons in each unit analyzed to produce a statistically reliable salary prediction. Often there are very few women in academic units and, therefore, units have to be grouped to produce a large enough number of faculty for use of regressionanalyses. Units cannot be grouped legitimately unless the average salaries in the groups are nearly the same or the regression equation is weighted to compensate for average salary differences of units in the groupings.

Furthermore, regression equations are used to predict the extent to which particular variables account for observed differences in populations. However, when one variable is substituted for another, part of the variance originally accounted for by the removed variable is "forced" into the variance attributed to the new variable. Additionally, variables, such as sex and rank, may be intercorrelated. Therefore, the interpretation of results is somewhat ambiguous. Also, the location of the average salary lines obtained from the predictions

of regression analyses are sensitive to a few salaries which deviate greatly from the mean. Adding or subtracting a few anomalous salaries may substantially affect the location of the average salary prediction line.

The limitations described above lead to an examination of descriptive statistical methodologies which might more accurately reveal salary differences between males and females. The approach taken was to compare male and female salary averages for 1) each division, and 2) within each division by grouping colleges and departments not in colleges using the variables: rank, sex and years-since-doctoral degree. Net mean salary differences were obtained for males and females according to their rank, cumulative years-since-doctoral degree, sex and academic division. Specifically, a male/female faculty salary difference was obtained and a net sum was calculated by:

1. Grouping faculty by academic unit and by sex, rank, and years-since-doctoral degree within each academic unit

2. A mean salary was computed for each corresponding group of males and females

3. A comparison was made to determine differences between male mean salary and female mean salary levels.

   a. If the male salary means for a group was higher than that for the females, the difference between the two means was multiplied by the number of women in the group to determine the total female salary deficit for the group.

   b. If the female salary mean for a group was higher than that for the males, the difference was multiplied by the number of women in the group to determine the total female salary surplus for the group.

4. All of the respective deficits and surpluses within each academic unit were summed to yield the total female faculty salary deficit or surplus. A total UMCP amount was derived by summing all of the division's deficits and surpluses.

The tables contained in Appendix A provide the data for this analysis.

A similar analysis also was done using the salary medians of the groups instead of the means. The results showed a very slightly smaller net salary difference between males and females than was computed using means.

A potential problem with these descriptive analyses was that years-since-doctoral degree for faculty were grouped by the following intervals:

21 or more years since degree
16 to 20 years since degree
10 to 15 years since degree
7 to 9 years since degree
4 to 6 years since degree
0 to 3 years since degree

As a result, the possibility existed that men and women might not be distributed comparably within the years-since-degree intervals. To test this possibility a detailed examination was made of professors in the College of Education who had received their doctorate ten to 15 years ago. This examination revealed that females were clustered toward the lower end of the interval and males toward the upper end. Correcting for this clustering essentially eliminated the $2,038 average salary deficit shown for females in the group. As a consequence, a methodology was sought which would overcome biases resulting from any uneven distributions of males and females within the years-since-degree groupings.

The methodology selected was to use a regression equation to predict only male salaries. This permitted large enough numbers of males for separate salary projections for each college; except for the College of Journalism, School of Architecture and College of Library and Information Services which were grouped. Also, this approach permitted a separate estimate for each cluster of all non-college departments in each division. These disaggregated groupings greatly reduced the problem of compensating for different average salary levels among departments, which would have to be grouped in order to have sufficient numbers to compute female regression lines which could then be compared with comparable males regression lines.

The calculation of the male salary regression line for each academic unit permitted a comparison of individual female salaries to that line for each year, thus eliminating the possibility of salary clustering by sex within year-since-degree intervals. Using the men's regression equations for each academic grouping, those women in the group were compared by rank and years-since-degree to determine collectively, in dollar amounts, how far they were from the men's prediction line. The resulting general model for each academic grouping was:

$$S = A + B_1\,YSD + B_2\,YSDSQ + B_3R_2 + B_4R_3$$

S = Salary (dependent variable)

A = Intercept

B_1-B_k = Respective independent variable regression coefficients

YSD = Years since receiving the doctoral degree

YSDSQ = Years since receiving the doctoral degree squared (included to account for the non-linear nature of salary growth over a career)

R_1 = Professor

R_2 = Associate Professor

R_3 = Assistant Professor

A graphic depiction of this model is shown in Figure 2.

Figure 2.

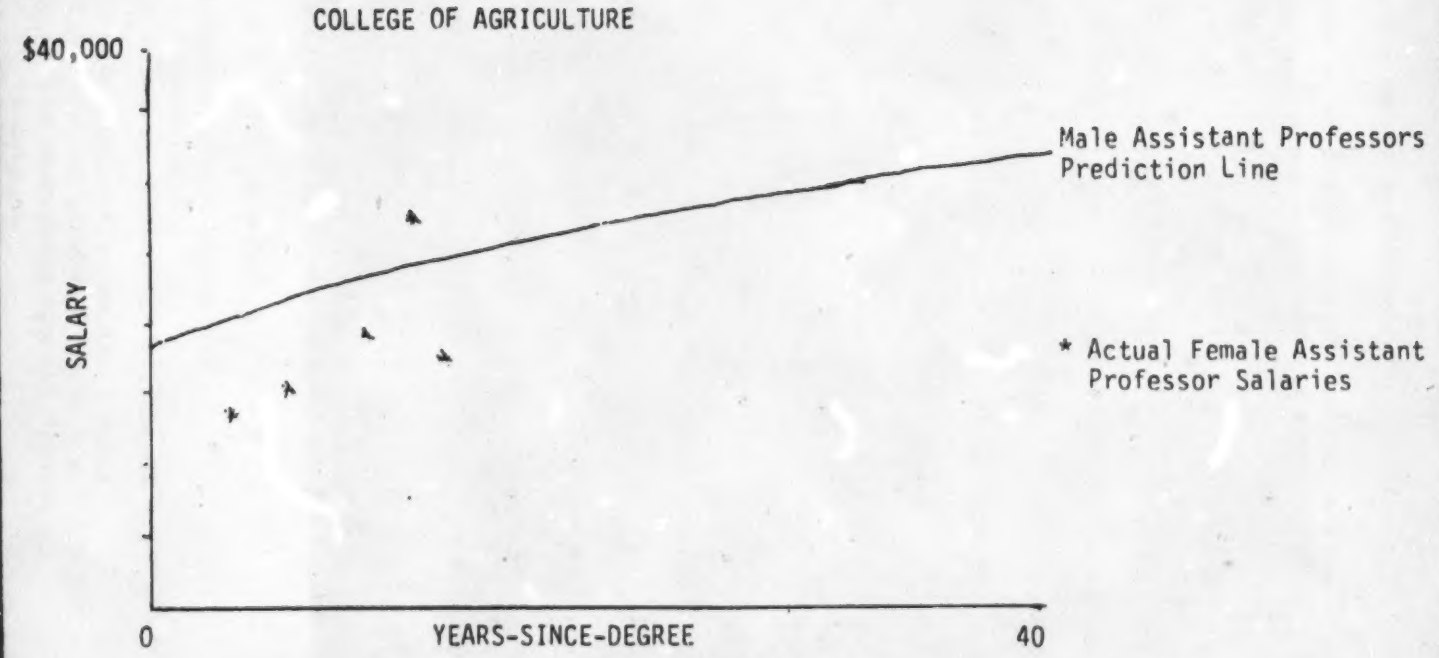
COLLEGE OF AGRICULTURE
$40,000
SALARY
0
YEARS-SINCE-DEGREE
40
Male Assistant Professors
Prediction Line
* Actual Female Assistant
Professor Salaries

Table 2 presents the results of the several computations using the model. Table 3 presents the computations using the descriptive analysis of mean differences within salary grouping. For the College of Journalism, the College of Library and Information Services, and the School of Architecture, the male/female faculty salary differences in Table 3 have been included from Table 2 since there were insufficient numbers of faculty to separately develop men's regression equations for those units.

FINDINGS AND CONCLUSIONS

CAMPUS-WIDE SALARY DIFFERENCES

Campus-Wide Salary Differences for All Ranks

The net difference between male and female average salaries, determined by calculating the regression equation for males and computing either the deficit or surplus amounts of female salaries, as represented by their distance from the men's prediction line, amounts to $105,554 for the entire campus. This amount varies only $3,797 from the amount calculated by the descriptive statistical methodology. The reasonableness of the male regression line was checked to determine whether it was inappropriately inflated by the salaries of a few male faculty members who were paid the 11 month equivalent of $50,000, or higher. This analysis revealed that most of the males in this category were in divisions which employed few females and, therefore the effect of these high salaries on the total cumulative salary difference was trivial. In addition, a few females included in the analysis had 11 month equivalent salaries exceeding $50,000. Therefore, the males with high salaries were not excluded from the calculation of total salary differences for the campus.

TABLE 2

TOTAL UMCP MALE AND FEMALE FACULTY SALARY DIFFERENCES[a] BY ACADEMIC UNIT AND RANK: DOCTORATES ONLY, FALL, 1979

ACADEMIC UNIT	RANK						Total	
	Professor		Associate		Assistant			
	Number	Difference	Number	Difference	Number	Difference	Number	Difference
AGLS-NC	2	($6,357.99)	6	$ 8,721.21	8	$ 3,654.77	16	$ 6,017.99
MPSE-NC	4	21,855.15	–	–	7	(12,195.17)	11	9,659.98
BSOS-NC	5	(7,556.79)	10	(88.63)	11	6,972.41	26	(673.01)
ARHU-NC	6	4,474.94	17	2,375.30	31	21,051.64	54	27,901.88
Coll AG	–	–	–	–	5	2,434.28	5	2,434.28
Coll ENG	–	–	1	3,146	1	(446.79)	2	2,699.21
Coll BUS	–	–	1	(3,136.42)	1	535.61	2	(2,600.81)
Sch ARCH	–	–	–	–	1	–	1	-0[b]-
Coll JOUR	–	–	–	–	2	(550)	2	(550)[b]
Coll L & IS	1	8,056	1	(807)	2	-0-	4	7,249[b]
Coll R, H & PE	1	2,238.77	4	1,793.83	6	4,045.61	11	8,078.21
Coll ECOL	1	(62.90)	3	1,591.95	8	8,058.85	12	9,587.90
Coll ED	6	5,212.06	12	11,668.31	25	18,868.97	43	35,749.34
TOTAL	26	$27,859.24	55	$25,264.55	108	$52,430.18	189	$105,553.97

[a]Calculated by determining the men's regression equation for each academic unit and computing either the deficit or surplus amounts that represents the distance each woman is from the men's prediction line.

[b]Values taken from Table 1. Since there were insufficient cases to determine the men's regression equation.

[c]NC=Non-college disciplines.

TABLE 3

TOTAL UMCP FEMALE FACULTY SALARY NET MEAN SALARY DIFFERENCES BY COLLEGE, RANK, AND YEARS-SINCE-HIGHEST-DEGREE: DOCTORATES ONLY, FALL, 1979

Academic Unit	Years	RANK			
		Professor	Associate Professor	Assistant Professor	Total
College of Agriculture	21+				
	16-20				
	10-15				
	7- 9				
	4- 6			$ 45	$ 45
	0- 3			2,404	2,404
				$2,449	$2,449
College of Engineering	21+				
	16-20				
	10-15		$ 3,683		$3,683
	7- 9				
	4- 6				
	0- 3			($142)	($142)
			$ 3,683	($142)	$3,541
College of Business & Management	21+				
	16-20				
	10-15				
	7- 9		($2,632)		($2,632)
	4- 6				
	0- 3			428	428
			($2,632)	428	($2,204)
College of Journalism	21+				
	16-20				
	10-15				
	7- 9				
	4- 6			($3,000)	($3,000)
	0- 3			2,450	2,450
				($ 550)	($ 550)
School of Architecture	21+				
	16-20				
	10-15				
	7- 9				
	4- 6				
	0- 3				

TABLE 3.--Continued

Academic Unit	Years	RANK			Total
		Professor	Associate Professor	Assistant Professor	
College of Library & Information Services	21+				
	16-20				
	10-15	$ 8,056			$ 8,056
	7- 9				
	4- 6		($807)		(807)
	0- 3				
		$ 8,056	($807)		$ 7,249
College of Health, Physical Educ., Recreation	21+				
	16-20	$ 2,500			$ 2,500
	10-25		($868)		(868)
	7- 9			$ 2,045	2,045
	4- 6			(128)	(128)
	0- 3			3,750	3,750
		$ 2,500	($868)	$ 5,667	$ 7,299
College of Human Ecology	21+			$ 1,730	$ 1,730
	16-20				
	10-15	($1,232)			($1,232)
	7- 9				
	4- 6				
	0- 3			$10,815	$10,815
		($1,232)		$12,545	$11,313
College of Education	21+	($883)	$ 2,324		$ 1,441
	16-20	2,541	(752)		1,789
	10-15	4,076	9,128	$ 2,727	$15,931
	7- 9		528	1,144	1,672
	4- 6		3,350	10,368	13,718
	0- 3			7,143	7,143
		$ 5,734	$14,578	$21,382	$41,694
SUB-TOTAL Colleges & School		$15,058	$13,954	$41,779	$70,791

Table 3.--Continued

Academic Unit	Years	RANK			Total
		Professor	Associate Professor	Assistant Professor	
Agricultural & Life Science Non-College Disciplines	21+	$ 5,633	$ 5,028		$10,661
	16-10	($10,983)	697		($10,286)
	10-15		3,314	$ 754	4,068
	7- 9		2,794	($1,830)	964
	4- 6			7,395	7,395
	0- 3			245	245
		($ 5,350)	$11,833	$ 6,564	$13,047
Mathematical & Physical Sciences and Engineering Non-College Disciplines	21+	$21,648			$21,648
	16-20				
	10-15	3,404		862	4,266
	7- 9				
	4- 6			171	171
	0- 3			($ 9,387)	($ 9,387)
		$25,052		($ 8,354)	$16,698
Behavioral & Social Sciences Non-College Disciplines	21+	($ 6,226)	($ 2,943)		($ 9,169)
	16-20	(8,566)		1,923	(6,643)
	10-15	(2,156)	(5,928)	594	(7,490)
	7- 9		1,120		1,120
	4- 6		5,364	(4,305)	1,059
	0- 3			6,336	6,336
		($16,948)	($ 2,387)	$ 4,548	($14,787)
Arts & Humanities Non-College Disciplines	21+	$ 1,032	($ 984)	($ 3,567)	($ 3,519)
	16-20			200	200
	10-15	1,716	2,748	(932)	3,532
	7- 9		($ 1,735)		($ 2,735)
	4- 6		740	6,435	7,175
	0- 3			11,355	11,355
		$ 2,748	($ 231)	$13,491	$16,008
SUB-TOTAL NON-COLLEGE DISCIPLINES		$ 5,502	$ 9,215	$16,249	$30,966
TOTAL UMCP[a]		$25,560	$23,169	$58,028	$101,757

[a]Computed by summing the Colleges and School sub-totals with Non-College Disciplines sub-totals.

The effect of age, rather than years-since degree, also was explored as a predictor of salary differences. For the total UMCP campus, as well as for each academic unit studied, the correlation of years-since degree with salary was higher than the corresponding correlation of age with salary. Also, since age correlates highly with years-since-degree, the regression model which included years-since-degree as a prediction variable proved more accurate than the model with age.

Campus-Wide Salary Differences for Each Rank

The disparity between male and female salaries was greatest at the professor rank. The average salary deficit per female at this rank was $1,071.50, over twice the average amount at the associate and assistant ranks. Only 13.8 percent of the total female faculty were at this rank but they accounted for 26.4 percent of the total salary deficit. The following table shows female salary differences among the ranks for the entire campus.

TABLE 4

Female Salary Differences by Rank, Total UMCP

Rank	# of Females	% of Total Females	Salary Differences	Salary Difference Per Female	% of Total Salary Difference
Professor	26	13.8	$27,859	$1,072	26.4
Associate Professor	55	29.1	25,265	459	23.9
Assistant Professor	108	57.1	52,420	485	49.7
TOTAL	189	100.0	$105,554	$558	100.0

DIVISION SALARY DIFFERENCES

Table 2 reveals that the male/female salary differences are not distributed evenly across division. Table 5 reveals that the Division of Human and Community Resources accounts for 57.5 percent of the total female salary deficit and the Division of Arts and Humanities accounts for another 25.9 percent, for a total of 83.4 percent of the campus female salary deficit. In addition, the Division of Human and Community Resources employs only 37.0 percent of the female faculty while accounting for the 57.5 percent of the total campus female salary deficit. In contrast, the Division of Behavioral and Social Sciences has 14.8 percent of the female faculty but reduces the campus wide female faculty salary deficit by 3.1 percent or $3,274. The groupings in which the percent of salary deficit exceeds the percent of female faculty includes the College of Library and Information Services and all colleges in the Division of Human and Community Resources. In addition to the Division of Behavioral and Social Sciences, the College of Journalism reduced the campus-wide female faculty salary deficit by 0.5 percent, or $550. In the School of Architecture no differences were found between the salary of the one female faculty member and comparable males.

Although, as noted, the use of the male salary regression method resulted in a very small difference from the descriptive method in calculating the total campus female faculty deficit (an increase of $3,797), considerable differences were observed in the distribution of the salary differences among the Divisions. Table 6 reveals the extent of these differences.

TABLE 5. -- Female Faculty Salary Differences by Division, College, & Non-college Department Groupings

Academic Grouping	No. of Females	Total Female Salary Difference	Salary Difference per Female	% of Total Females	% of Total Salary Difference
AGLS	(21)	($8,452)	(-$402)	(11.1)	(8.0)
Non-Coll	16	6,018	-376	8.5	5.7
Coll. of Agr.	5	2,434	-487	2.6	2.3
ARHU	(57)	(27,352)	(-480)	(30.2)	(25.9)
Non-Coll.	54	27,902	-517	28.6	26.4
Sch. of Arch.	1	-0-	-0-	0.5	-0-
Coll. of Journ.	2	-550	+275	1.1	-0.5
BSOS	(28)	(-3,274)	(+117)	(14.8)	(-3.1)
Non-Coll.	26	-673	+26	13.8	-0.6
Coll. of Bus.	2	-2,601	1,300	1.1	-2.5
HUCR	(70)	(60,664)	(-867)	(37.0)	(57.5)
Coll. of R.H. & P.E.	11	8,078	-734	5.8	7.7
Coll. of Ecol.	12	9,588	-799	6.3	9.1
Coll. of Ed.	43	35,749	-831	22.8	33.9
Coll. of L & IS	4	7,249	-1,812	2.1	6.9
MPSE	(13)	(12,359)	(-951)	6.9	(11.7)
Non-Coll.	11	9,660	-878	5.8	9.2
Coll. of Engr.	2	2,699	-1,350	1.1	2.6
TOTAL UMCP	189	$105,554	-$558	100.0	100.0

The deficit observed in the Division of Agriculture and Life Sciences using the descriptive methodology was $7,044 less than when using the regression method. In the Division of Arts and Humanities the deficit observed, using the descriptive methodology, increased by $11,894 for non-college departments when using the regression method. Since the descriptive methodology was used in both analyses for the School of Architecture and Colleges of Journalism and Library Information Services, there were no differences for these units. The surplus observed in BSOS, using the descriptive methodology, was reduced by $13,717 by the regression method. In HUCR and MPSE, using the regression method, the deficit observed using the descriptive methodology was reduced by $6,881 and $7,880, respectively. The most plausible explanation for these changes is that the distribution of males and females was different within the years-since-doctoral degree intervals in the descriptive analysis. However, in the aggregate for the total campus these divisional differences nearly offset each other.

DISTRIBUTION OF FEMALES ACROSS DISCIPLINES

Female doctoral faculty are concentrated in disciplines having lower average salaries. For example, the four groupings whose all ranks faculty salary averages exceeded the campus-wide all ranks average faculty salary, employed only 41 females or 21.7 percent of the total female faculty (Table 7). The three divisions which had the highest average all-ranks faculty salaries employed only 32.8 percent of the females. These differences are related to the differing availabilities of female faculty candidates in the various disciplines.

TABLE 6

COMPARISON OF DIVISIONAL DISTRIBUTION OF SALARY DIFFERENCES USING REGRESSION AND DESCRIPTIVE METHODOLOGIES

Academic Unit	Total Female Salary Diff.: Regression Method	Total Female Salary Diff.: Descriptive Method	Difference: Regression Minus Descriptive
AGLS	($8,452)	($15,496)	(-$7,044)
Non-Coll.	6,018	13,047	-7,029
Coll of Agr.	2,434	2,449	- 15
ARHU	27,352	15,458	(11,894)
Non-Coll.	27,902	16,008	11,894
Sch of Arch.	-0-	-0-	-0-
Coll. of Journ.	-550	-550	-0-
BSOS	(-3,274)	(-16,991)	(13,717)
Non-Coll.	-673	-14,787	14,114
Coll. of Bus.	-2,601	-2,204	-397
HUCR	(60,664)	(67,555)	(-6,891)
Coll. of R.H. & P.E.	8,078	7,299	779
Coll. of Ecol.	9,588	11,313	-1,725
Coll. of Ed.	35,749	41,694	-5,945
Coll. of L & IS	7,249	7,249	-0-
MPSE	(12,359)	(20,239)	(-7,880)
Non-Coll.	9,660	16,698	-7,038
Coll. of Engr.	2,699	3,541	-842
TOTAL UMCP	$105,554	$101,757	$3,796

The campus, as part of its Affirmative Action Plan, has set goals for recruiting females for the various disciplines, based on the national availability of candidates.

IMPLICATIONS OF FINDINGS

This study reveals that for the campus in the aggregate, when taking years-since-doctoral degree and rank into consideration, on the average females are paid less than males. The best estimate of this difference is $105,554. This aggregate figure, however, is highly misleading because 83.4 percent of the deficit is located in two divisions (ARHU & HUCR) which employ 67.2 percent of the female faculty. In one division (BSOS) average female salaries are slightly higher than those of males.

The reasons for the differences found between male and female salaries are not definitely established by this study. UMCP has placed a high priority on salary equity over at least the past eight years and has asked divisions and departments annually to examine and remedy, if warranted, any salary differences which appeared questionable. Many female salaries have been adjusted as a result of these reviews. While careful reviews of individual salaries have been made, this study shows that differences persist which cannot easily be explained.

This campus could undertake studies incorporating additional variables which might legitimately explain some or all of the observed differences. A study of additional variables such as differences in desire for promotion, motivation, occupational primacy in family, and

TABLE 7
PERCENTAGE OF FEMALES AND COMBINED AVERAGE SALARY BY RANK

Academic Unit	PROFESSOR #		PROFESSOR %		PROFESSOR Average Salary	ASSOCIATE PROFESSOR %		ASSOCIATE PROFESSOR Average Salary	ASSISTANT PROFESSOR %		ASSISTANT PROFESSOR Average Salary	ALL RANKS %		ALL RANKS Average Salary
	M	F	M	F		M	F		M	F		M	F	
AGLS														
Non-College	112	16	40.9	1.6	29567	33.1	4.7	22562	13.4	6.3	19096	87.4	12.6	24801
Coll. of Agric.	101	5	35.9		27978	32.0		23252	27.1	4.9	20348	95.2	4.8	23842
ARHU														
Non-College	180	54	29.5	2.6	30652	25.6	7.3	22560	21.8	13.3	16716	76.9	23.1	23106
School of Arch.	1	1				50.0		25396		50.0	16691	50.0	50.0	21044
Coll. of Journ	7	2	22.2		37000	11.1		24000	44.4	22.2	19924	77.8	22.2	24172
BSOS														
Non-College	131	26	32.5	3.2	34382	29.9	6.4	24363	21.0	7.0	18908	83.4	16.6	26408
Coll. of Bus.	52	2	31.5		35270	29.6	1.9	25964	35.2	1.9	22001	96.3	3.7	27018
HUCR														
Col. of R,H & PE	29	11	22.5	2.5	28343	17.5	10.0	22463	32.5	15.0	18644	72.5	27.5	22119
Col. of Ecology	15	12	11.1	3.7	30984	25.9	11.1	23013	18.5	29.6	17829	55.6	44.4	22355
Col. of L & IS	10	4	42.9	7.1	28762	7.1	7.1	22923	21.4	14.3	19943	71.4	28.6	23122
Col. of Educ.	95	43	19.6	4.4	30357	34.8	8.7	23081	13.8	18.1	18707	68.8	31.2	23259
MPSE														
Non-College	191	11	51.5	2.0	33110	25.7		23841	17.3	3.5	19173	94.5	5.5	27866
Col. of Engr	86	2	43.2		30254	31.8	1.1	23508	22.7	1.1	19919	97.7	2.3	25565
TOTAL UMCr	1010	189	34.6	2.2	31441	28.6	4.6	23357	20.9	9.0	18775	84.2	15.8	25143

career expectations was undertaken at an industrial concern, revealing significant variations between males and females.[3] The social variables largely appeared to explain differences in salary and rank between male and female employees. However, such differences may not be as great in a professional field such as higher education.

Another avenue would be to study possible differences in the quality of male and female faculty. As noted earlier, however, quality variables are hard to define and quantify. In addition, in an institution as large as UMCP, with comparatively large numbers of females in the divisions where salary differences are greatest, one would expect that the average quality of female faculty would be comparable to that of males. A study of faculty quality would not likely be more objective and defensible than current individual salary examinations.

A further consideration is the time and costs involved in undertaking further studies which would require collection of data not available.

Improvements may be possible in the methodology used to analyze the variables included in this study. The methodology followed, however, was extensively reviewed and its appropriateness and results compared with those of alternative methodologies. Several methodologies were used and the results were quite similar, so the one was selected which had the fewest identifiable drawbacks. Therefore, further refinements or new approaches seem likely to produce insignificant changes in

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[3] Hoffman, C. & Reed, J. S. "Sex Discrimination? - The XYZ Affair.", The Public Interest, No. 62, Winter 1981.

the results. The methodology selected will be used to analyze 1980/81 faculty salary data to determine whether actions taken to increase female salaries on the basis of past studies has reduced the differences found in this study.

REVIEW AND ACTIONS

Based on the findings of this study, the Chancellor requested further review of female faculty members' salaries. On April 28, 1981, the Chancellor directed the Provosts to establish divisional salary committees for the purpose of determining the comparability of individual female faculty members' salaries with those of similarly situated male faculty members.

Each Provost was asked to name an *ad hoc* committee of seven senior-level faculty, to review and make recommendations on the salary of each of the women faculty employed in their respective divisions. This review came after the regular annual Division salary reviews, so that resulting salary relationships could not be affected by subsequent decisions on male faculty salaries. The committees were constituted so that women faculty, and faculty intimately familiar with each woman faculty member's discipline, were represented. Each committee's recommendations were reviewed by the respective Provosts, forwarded to the Chancellor, and included in the FY 1982 campus budget.

This process resulted in decisions by the Chancellor to increase the salaries of 68 women, by a total of $70,612, or an average of $1,038.41 per affected female, for the fiscal year beginning July 1, 1981.

In addition to the female faculty salary adjustments, other changes have occurred in faculty salary levels since the Fall 1979 data were analyzed. Changes resulted from annual merit increases, appointments, promotions, and separations. The net effect of these changes on relative male and female faculty salary levels will be analyzed during the coming academic year, using Fall 1981 salary data.

STATISTICAL

APPENDICES

(Not included in this paper)